EXPLANATION OF SIGNIFICANT DIFFERENCES

ORMET SITE
Record of Decision Dated 9/12/94

Subsequent to the signing of the Record of Decision (ROD) on September 12, 1994, two changes in the Remedial Action selected in the ROD have been proposed by the U.S. Environmental Protection Agency (USEPA). These are significant changes to components of the remedy with respect to its scope and cost. I am hereby approving these changes to the ROD and providing public notice of these changes in accordance with CERCLA Section 117(c).

Introduction

The Ormet Superfund Site (the Site) is owned and operated by the Ormet Primary Aluminum Corporation (Ormet), a primary aluminum reduction facility. The Site is located in Monroe County, Ohio, on the west bank of the Ohio River approximately 35 miles south of Wheeling, West Virginia and 2.5 miles north of Hannibal, Ohio, on State Highway 7. Immediately to the southwest of the Ormet Site is the Consolidated Aluminum Corporation (CAC).

The Ormet Site is located in an area known as Buck Hill Bottom, a portion of the Ohio River floodplain that formed as river sediments were deposited on the inside of a meander bend. This lens-shaped bottomland is approximately 2.5 miles long and 0.5 mile wide. The Ormet property occupies about 245 acres in the northern portion of the area. The northeastern portion of the Ormet property is the area that was investigated during the Remedial Investigation and Feasibility Study (RI/FS) conducted by Ormet. The southwestern portion contains the active manufacturing facility.

One of the components of the remedy was to remove and consolidate PCB soils from the Carbon Runoff Deposition Area (CRDA) to a residual level of 1 ppm. During the Remedial Design (RD) it was found that current field testing techniques do not allow analysis to 1 ppm but they do allow analysis to 10 ppm. Current Toxic Substance Control Act (TSCA) protocols as discussed in USEPA's August 1990 Guidance on Remedial Action for Superfund Sites with PCB Contamination, allow residuals up to 10 ppm Polychlorinated Biphenyls (PCBs) if the soil is covered with a 10 inch layer of clean soil. Since this will provide an equal level of protectiveness it is a contingency which may be used should the

lab analysis indicate that a 1 ppm level was not achieved but a 10 ppm level was achieved.

Another component of the ROD requires that soils with PCB levels above 50 ppm be placed in an off-site TSCA landfill. During the design it became apparent that there was more soil above 50 ppm than expected and that it would be more cost-effective to construct a TSCA compliant cell on site. Also because of problems with material handling it became apparent that it would be cost effective to place all PCB soils excavated into a larger TSCA cell regardless of the PCB level of the soil. The estimated cost to dispose of the PCB materials off-site is $1,200,000 and the estimate for on-site disposal is $250,000.

SITE HISTORY, CONTAMINATION PROBLEMS AND THE SELECTED REMEDY

Since the plant started operations in 1958, Ormet's main process has been the reduction of alumina to produce aluminum metal. From 1958 to 1968, approximately 85,000 tons of spent potliner, a hazardous by-product of aluminum production (containing cyanide), were placed in an unlined, 10 acre open area in the northeast part of the Site, identified as the Former Spent Potliner Storage Area (FSPSA).

There are five impoundments on Site, called the Former Disposal Ponds (FDP). The total area of FDPs 1-4 is about 5 acres. FDP 5 is about 13 acres in size. These ponds are unlined and constructed of natural materials. FDPs 1 through 4 received approximately 50,000 cubic yards of process waste from the air emissions wet scrubbing system in the form of sludge, the primary constituents of which were alumina, particle carbon, and calcium-based salts.

From 1968 to 1981, much of the potliner waste was removed from the FSPSA by Ormet and transported to an on-site recovery plant that removed a useable material called cryolite from the potliner. Waste slurry from the cryolite recovery plant was routed to FDP 5, although FDPs 1-4 may have received minor amounts of cryolite plant waste. The tailings are alkaline and consist primarily of carbonaceous material from the potliner, along with sodium and calcium-based salts. The volume of materials in FDP 5 is about 370,000 cubic yards. Since 1980,

spent potliner material generated by the plant has been transported off-site for disposal.

From about 1966 until mid-1979, Ormet deposited waste construction materials and other miscellaneous plant debris, including capacitors and spent potliner, in the southeastern corner of the Site, adjacent to FDP 5 and the Ohio River. This 4 to 5 acre area is designated as the Construction Material Scrap Dump (CMSD).

An area referred to as the Carbon Runoff and Deposition Area (CRDA) contains carbon deposits, probably carried there by storm water runoff from an area of the Ormet plant where spent graphite anodes were crushed in a mill. Some of the carbon runoff may also have entered the 004 outfall stream and backwater area.

In 1972, Ormet initiated a ground water investigation which identified high levels of fluoride coming from FDP 5. To protect the quality of its process water, two extraction wells were installed to intercept the plume. These wells have operated continuously through the present day.

A 1978 study by Ormet showed improvement in the ground water from under FDP 5, but indicated decreased quality in the area of the FSPSA. A 1984 study confirmed that the FSPSA was leaching contaminants to ground water. Additional sampling in 1985, 1986, and two rounds of sampling during the Remedial Investigation (RI) in 1988 and 1990 show concentrations of fluoride in ground water decreasing down-gradient of the disposal ponds, but fluoride and cyanide are on the rise in and downgradient of FSPSA.

The 1985 study identified low levels of toluene but no other organic compounds in ground water.

Based on contamination found at the Site and its potential impact on drinking water supplies, U.S. EPA placed the Site on the National Priorities List (NPL) in September 1985.

In May 1987, the USEPA, Ohio Environmental Protection Agency (OEPA), and Ormet Corporation (Ormet) entered into an Administrative Order by Consent (Consent Order) providing for Ormet to conduct the Remedial Investigation/ Feasibility Study (RI/FS) under USEPA and Ohio Environmental Protection Agency

(OEPA) supervision. The RI report was completed in December 1992 and the FS was completed in December 1993.

In addition to defining the contamination found in the disposal areas described above, seeps were discovered during the RI near the Plant Recreational Area ballfields and along the western edge of the CMSD. The seeps contained cyanide ranging in concentrations from 79 to 950 ppb.

The areas and media investigated during the two phases of the RI included the following:

* Former Disposal Ponds (FDPs)
* Former Spent Potliner Storage Area (FSPSA)
* Carbon Runoff and Deposition Area (CRDA)
* Construction Material Scrap Dump and Western Seeps (CMSD)
* Ballfield and Northern Seeps (SP)
* Ground Water (GW)
* Surface Water (SW)
* Sediments (from Ohio River and Backwater Area) (SED)
* Air
* Environmental Evaluation

As a result of the investigation, low to moderate levels of contamination were identified in all media and sources. Cyanide, fluoride, chromium, arsenic, and polynuclear aromatic hydrocarbons (PAH) were found in solids from the FDPs. The contaminants do not appear to be migrating to any significant degree, either to ground water or air, except that fluoride is present in ground water down-gradient of FDP-5 at levels that exceed the MCL.

The areas and media investigated during the two phases of the RI included the following:

Pond solids are characteristically alkaline in nature (i.e., pH > 7.0). There is no evidence of surface runoff from the ponds. However, a steel conduit extends from the pond 5 dike along the Ohio River north of the CMSD, and may provide subsurface drainage from that pond, or from the CMSD. Sampling results of effluent from the conduit showed cyanide at greater than 4 mg/l.

At the FSPSA, relatively high concentrations of PAHs were detected in soils in the 2-4 foot horizon. Because PAHs are relatively immobile, they are not expected to contribute significantly to releases to ground water from the FSPSA. Moderate levels of cyanide and arsenic, both mobile in ground water, were identified in the FSPSA. The FSPSA is the primary contributor to cyanide and fluoride contamination in ground water, and may also be a factor in the arsenic showing up in down-gradient wells. In contrast to the situation at FDP-5 above, fluoride levels in and down-gradient of the FSPSA have shown an increasing trend since 1972. For example, at the MW-18/TH-11 location, levels of fluoride have risen from 10 ppm in 1972 to 710 ppm in 1990.

The CRDA is underlain by moderate to low-permeability soils. A single composite sample from the CRDA showed polychlorinated biphenyls (PCBS) at 56 mg/kg. PAHs were detected in the surficial carbon soil at higher levels than in the underlying native soils, indicating low potential for migration to ground water. However, the CRDA is a probable source of PCBs and PAHs to the backwater and river bank, transported by stormwater runoff. Arsenic was also detected as high as 83 mg/kg in soils at the CRDA.

The CMSD is a significant source of cyanide and PCBs in the seeps, backwater sediments, and river water. The principal transport mechanism appears to be discharge of seep water to the 004 Outfall stream, and there may be transport via the steel conduit mentioned above. There is a low-permeability clay/silt layer underneath the CMSD which appears to provide a natural barrier to contaminants leaching to ground water, and the Ormet Ranney well creates a hydraulic gradient away from the river, so ground water discharge to surface water is not considered a reasonable migration pathway. PAHs are present at levels that contribute to an increased ecological risk, but are not believed to be migrating out of the source area.

Two seeps were identified to the north of FDP 5 and the CMSD. These seeps drain out in the vicinity of the plant recreation area ballfield. Sample results indicate cyanide as high as 1.5 mg/l.

Ground water at the site is contaminated in excess of Safe

Drinking Water Act (SDWA) Maximum Contaminant Levels (MCLS) for a number of contaminants, including tetrachloroethene (PCE), cyanide, fluoride, arsenic, antimony, and beryllium. The primary source of the plume appears to be due to infiltration of precipitation through the FSPSA. The plume extends about 3,000 feet from the FSPSA before it reaches the interceptor wells. It is characterized by a basic pH near the FSPSA, which becomes progressively more neutral with distance from the source. Sodium is also typically elevated in the plume.

The ROD requires the following actions to be taken for these areas of the site:

Ground Water	Pumping shall continue at the Ormet Ranney well and existing interceptor wells to maintain capture zone of contaminated ground water. Interceptor well water shall be treated by ferrous salt precipitation and clarification, or other means necessary to achieve standards set by the OEPA Program implementing the National Pollutant Discharge Elimination System **(NPDES)**. Treated water shall be discharged to the Ohio River.
Leachate	Trench drains shall be installed to intercept and extract all leachate seeping from the Construction Material Scrap Dump (CMSD). Leachate shall be treated to NPDES discharge limits.
CMSD	The Construction Materials Scrap Dump (CMSD) shall be re-contoured and covered with a dual-barrier cap that meets the requirements of the Resource Conservation Recovery Act (RCRA), Subtitle C.
Soils	Residual soil contamination in the Former Spent Potliner Storage Area (FSPSA) shall be treated by in-situ soil flushing. Contaminated soils from the CRDA shall be excavated and consolidated under the cover at the CMSD. Soils to be excavated from the trench drains shall also be consolidated under the CMSD cap.

Sediments	PCB and PAH-contaminated sediments shall be removed by dredging from the Outfall 004 stream backwater area. Sediments with PCB concentrations lower than 50 ppm shall be solidified and consolidated under the CMSD cap. Sediments with PCB concentrations higher than 50 ppm shall be disposed off-site in a USEPA approved disposal facility.
Site-wide	Use of institutional controls to limit ground water and land use.

DESCRIPTION OF THE DIFFERENCE IN THE ESD AND THE BASIS FOR THE DIFFERENCE

The ROD provided for the excavation of PCB contaminated soils down to a level of 1 ppm. TSCA allows for excavation of PCB soils down to a level of 10 ppm if a ten inch layer of clean soil is placed over the excavated area. Because of the difficulty in obtaining field analysis down to the 1 ppm level the following protocol will be followed:

The remediation contractor will remove all visible carbons as previously discussed. They will also remove the soil at the carbon/native soil interface, and any underlying soil exhibiting signs for potential elevated PCB content (dark staining, etc.). Verification sampling and analysis will then be implemented within discrete areas to assess the representative PCB concentrations of the underlying soil. In the event the PCB concentration is between 1 and 10 ppm, Ormet will have the option of directing the remediatiion contractor to perform additional excavation and disposal (to be followed by verification sampling, and possibly new decision points) or to place a 10-inch thick vegetative cover over the area. This would effectively mitigate the potential for exposure to, or migration of, the low-level PCB containing soils.

This procedure will insure compliance with TSCA and U.S. EPA's August 1990 Guidance on Remedial Actions for Superfund Sites with PCB Contamination. It will also aid in a timely completion of this phase of the remedy. The ROD also provided for PCB soils

with concentrations equal or greater than 50 ppm to be taken to a TSCA Disposal Facility and soils with concentrations less than 50 ppm to be disposed of in the CMSD prior to constructions of the multilayer cover.

During the pre-design phase of the Remedial Design, sampling was performed to identify the distribution of PCB-containing materials in the Backwater Area and to determine whether additional area adjacent to the CRDA (the area between the CMSD and 004 Outfall Stream) needed to be addressed as part of the CRDA removal activities. Based upon information gathered during the pre-design investigations and presented in the pre-design investigation reports, at least 3,000 cubic yards of material exhibiting PCB concentrations greater than 50 ppm will be encountered. This includes an estimated 2,500 cubic yards of sediment from the Backwater Area, and an approximately 200 cubic yard carbon deposit between the 004 Outfall Stream and CMSD. Due to the potential need for stabilization during construction, the material could increase by 10 percent or more to a disposal volume of 3,000 cubic yards or more. As a result of this determination, it was recommended by Ormet that Remedial Design be amended to include a TSCA Cell for disposal of material exhibiting PCB concentrations greater than 50 ppm.

Once the decision was made to incorporate the TSCA cell, the remaining decision involves specifying an appropriate design size. Construction of the TSCA cell involves a high capital investment. However, due to the inefficient geometry of small cells, the cell volume can be increased for a relatively small incremental cost. Due to this characteristic, Ormet believes that it is prudent to design the TSCA cell to contain all of the material removed from areas suspected to contain PCBs (i.e., the CRDA and Backwater Area). Based upon information developed during the RI/FS, the CRDA is believed to contain on the order of 5,700 cubic yards of carbon material. If it is assumed that an additional 6-inches, on average, of soil will be removed from beneath the carbon during remediation this will account for an additional 3,500 cubic yards of material. Thus, on the order of 9,000 cubic yards of potentially PCB-containing material may be removed from the CRDA. Combined with the amount of material that will be removed from the Backwater Area, this results in a recommended disposal volume of approximately 12,000 cubic yards.

Sizing of the TSCA cell to contain all of the suspected PCB-containing waste will also serve to simplify the construction process, and thus reduce the potential for difficulties during construction. Under the original project requirements, the Contractor would be required to stockpile the CRDA and Backwater Area materials and identify representative PCB levels prior to disposal within the CMSD or TSCA cell. These activities will require the contractor to develop areas suitable for stockpiling, handle soft materials prior to stabilization, and wait for the results of testing before being able to dispose of the soils. In addition to the record keeping difficulties this will entail, these actions will increase the potential for accidental personnel exposure during the construction activities. If the cell were sized to handle all of the potential PCB containing materials, the need to stockpile and test the material prior to disposal can be eliminated, greatly simplifying this aspect of the construction.

This procedure will result in all of the PCB soils which are excavated being placed in a TSCA cell and thus afford greater environmental protection. At the same time it will facilitate a timely completion of this phase of the remedy while providing for better worker safety. Should the volume of excavated PCB material exceed the volume of the TSCA cell, Ormet will still have the option of sending materials with PCB concentrations of 50 ppm or more to a TSCA landfill off-site or placing material with PCB concentrations less than 50 ppm under the cap of the CMSD.

The TSCA unit will not meet the 40CFR 751.75(b)(3) siting criteria which requires a 50 foot separation between the base of the disposal unit and the highest historic groundwater level. A waiver from this requirement is granted for the following reasons:

1) The TSCA unit will utilize a double liner with a leachate collection and monitoring system.

2) Ormet will provide perpetual care for the TSCA cell including semi-annual groundwater monitoring for PCB's.

3) A groundwater collection and treatment system is in operation.

4) The TSCA cell will be located above the 100 year flood plain.

5) Utilization of an on-site TSCA cell will result in the below 50 ppm PCB material being placed in a TSCA cell instead of

just into the CMSD. Most of the material with PCB levels above 50 ppm has a level between 50 and 110 ppm. All of the material has a PCB level below 500 ppm.

OHIO ENVIRONMENTAL PROTECTION AGENCY

The Ohio EPA did not concur with the ROD, is not a party to the Consent Decree and is not taking an active role in the implementation of this remedy. OEPA was invited to comment on this document consistent with 40 CFR 300.435(c)(2). OEPA proposed that these changes should be documented in a ROD Amendment. USEPA has determined that the appropriate document for these changes is an ESD. OEPA expressed concerns about the changes in the clean-up level as applied to the 004 Backwater Area. These changes will only apply to the CRDA. The ESD addresses the need for a TSCA waiver as requested by OEPA. OEPA expressed concerns about flood protection for the CMSD which now includes a TSCA cell. USEPA believes that because of the flood protection included in the construction of the unit, the perpetual care of the unit and the fact that the unit will be above the 100 year flood plain that flooding has been adequately addressed.

PUBLIC PARTICIPATION ACTIVITIES

A copy of the ESD is available for review at the:

United States Post Office
Hannibal, Ohio 43931

New Martinsville Public Library
160 Washington St.
New Martinsville, West Virginia
26155

AFFIRMATION OF STATUTORY DETERMINATION

USEPA believes that the remedy remains protective of human health and the environment, complies with Federal and State requirements that are applicable or relevant and appropriate to this remedial action except for the TSCA 40 CFR 761.75(b)(3) siting criteria for TSCA units, and is cost effective. The protectiveness of this part of the remedy is increased because all or most of the PCB soils will be placed in a TSCA cell including PCB soils with PCB concentrations under 50 ppm. The remedy selected uses permanent solutions and alternate treatment technologies to the maximum extent practicable for this site.

Because the remedy selected in the ROD will result in hazardous substances remaining on-site, a review will be conducted within five years after commencement of the remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment.

Meredith D Jordan

Valdas V. Adamkus
Regional Administrator

4-1-97

DATE